


MEMORANDUM FOR: The Record

DATE: August 8, 2011

**SUBJECT: Non-Testing Related Regulatory Issues: Subparts B,C,D,and E of 40 CFR
Section 227 for the San Juan Harbor Federal Navigation Project, San Juan,
Puerto Rico**

FROM: 
Douglas Pabst, Team Leader
Dredging Sediments and Oceans Team
Division of Environmental Planning and Protection
EPA Region 2

SUBPART B - ENVIRONMENTAL IMPACT

1. Section 227.5 Prohibited materials.

The material to be placed at the San Juan Harbor, PR Ocean Dredged Material Disposal Site (SJS) is dredged material that has been evaluated and found to meet the regulatory testing criteria of 40 CFR Sections 227.6 and 227.27. The material proposed for placement at SJS is not:

- high level radioactive waste;
- material used for radiological, chemical, or biological warfare;
- materials whose composition and properties have been insufficiently described to enable application of 40 CFR Part 227 Subpart B;
- inert synthetic or natural materials which may float or remain in suspension so as to materially interfere with fishing, navigation, or other use of the ocean;
- medical waste as prohibited by §102(a) of MPRSA.

2. Section 227.7 Limits established for specific wastes or waste constituents.

§ 227.7(a) and (b): The proposed dredged material does not contain liquid waste or radioactive materials.

The proposed dredged material meets the requirements of §§ 227.7(c)(1)-(3) as discussed below.

Section 227.7(c) specifically applies to wastes containing living organisms, which in the case of dredged material potentially would consist of organisms dwelling on or in Harbor sediments and pathogenic agents resulting from the presence of Combined Sewer Overflows (CSOs), uncaptured raw sewage discharges, or contaminated urban runoff (storm sewers). Under §227.7(c)(1)-(3), wastes containing living organisms may not be placed in the ocean if the organisms would endanger human health or that of domestic animals, fish, shellfish, or wildlife by: (1) extending the range of biological pests or other agents capable of infesting, infecting, or extensively and permanently altering the normal population of organisms; (2) degrading uninfected areas; or (3) introducing viable non-indigenous species. As discussed below, placement of the proposed dredged material at the SJS would not endanger human health or that of marine life or result in the effects specifically enumerated in §§227.7(c)(1)-(3).

The SJS was designated under the MPRSA for the disposal of dredged material from navigational and other dredging projects located within San Juan Harbor and within 20 miles of its entrance. The final site designation process (which included preparation of an EIA and assessment of compliance with the environmental criteria of 40 CFR Part 228) was completed in 1988. The center of the SJS is located approximately 2 nautical miles north of the entrance to San Juan harbor.

There is no evidence indicating that dredged material disposed at the SJS, endangers human health or that of domestic animals, fish, shellfish, or wildlife due to the presence of living organisms, including biological pests, viruses, pathogenic microorganisms, or other agents.

With regard to potential introduction of viable species not indigenous to the area, monitoring studies conducted as part of the EIS and SMMP processes have not indicated the presence of non-indigenous species at the SJS. Several factors make it highly unlikely that dredged material placed at the SJS would introduce viable non-indigenous species to the SJS. Organisms potentially in the material proposed for dredging from San Juan Harbor would have to survive the effects of dredging, transportation to the site by barge, and subsequent placement. Also while certain environmental characteristics of the SJS may be within the tolerance range of relocated organisms (e.g., salinity, grain size), many of the transported organisms will require shallow water conditions (e.g., light levels, wave/current activity, temperature, prey/plant availability) and will perish in the deep water at the SJS.

In summary, the dredged material proposed to be placed at the SJS originates from the San Juan Harbor area and the long-term historical disposal of San Juan Harbor dredged material at the SJS has not resulted in evidence of endangerment of human health or that of marine life as a result of the presence of living organisms in dredged material. There is no evidence that indicates that dredged material is a significant source of pathogenic contamination in the area, that past dredged material disposal has extended the range of undesirable living organisms or pathogens or degraded uninfected areas, or that such past disposal has introduced viable non-indigenous

species into the area. Accordingly, it is determined that placement of the dredged material from the proposed project at the SJS would be in compliance with the provisions of 40 CFR 227.7(c)(1)-(3).

§227.7(d) Requirements specific to wastes which are highly acidic or alkaline:

This subsection would be of greater relevance to liquid wastes or sludges. Dredged material is a naturally occurring substance derived as a result of weathering of upland rocks and soils, natural grain size sorting during transport, and deposition in a subaqueous environment. It is by nature composed of mineral grains that are not highly acidic or alkaline, but are at a near neutral pH, especially when derived from a salt water environment, such as San Juan Harbor. Thus, the dredged material from this project is not highly acidic or alkaline.

§227.7(e) Oxygen consuming or biodegradable wastes:

Wastes containing biodegradable constituents or constituents which consume oxygen in any fashion may be placed in the ocean only under conditions in which the dissolved oxygen, after allowing for initial mixing, will not be depressed by more than 25 percent below prevailing conditions at the receiving site at the time of placement. Studies have shown that past dredged material disposal in water causes an initial reduction in dissolved oxygen that returns to ambient level within a few minutes (USEPA, 1982). Previous plume tracking/monitoring studies (conducted at the former Mud Dump Site during dredged material disposal events) showed: (1) the release of dredged material into the water column resulted in rapid dispersal (turbulent mixing) of the plumes within the first few minutes after release; and (2) plume dilution after two hours, based on total suspended solids, ranged from approximately 64,000:1 to 557,000:1 (Battelle, 1994). Mean bottom currents in the SJS are weak but provide for continuous movement of water, as do the ebb and flood of the tide. These movements exchange or replace the water inside the SJS with "new" water. This ensures that any fluctuation in dissolved oxygen (DO) will only be temporary as "new" oxygenated water circulates into the disposal area. These field studies and physical oceanographic characteristics of the PS show that past dredged material disposal conformed with the regulations in that they did not cause a DO depression greater than 25 percent after allowance for initial mixing, and it is therefore expected that placement of dredged material at the SJS will similarly not depress DO.

In summary, the chemical characteristics of high alkalinity and/or acidity, synergistic effects or formation of toxic compounds, and depletion of dissolved oxygen in the overlying water after initial mixing would not be associated with the proposed project material being placed at the SJS.

Section 227.8 Limitations on the Disposal Rates of Toxic Wastes;
Section 227.11 Containerized Wastes; and
Section 227.12 Insoluble Wastes:

The material which is to be placed at the SJS is not containerized waste as defined in Section 227.11 nor does it violate the restriction on insoluble wastes as defined in Section 227.12. With respect to Section 227.8 (limitations on the disposal rates of toxic wastes), the proposed material meets the criteria for acceptability based on the LPC as described in Section 227.27. Therefore, the proposed project material meets requirements outlined in Sections 227.8, 227.11, and 227.12.

Section 227.9 Limitation on Quantities of Waste Materials

Section 227.9 provides that substances that may cause damage to the ocean environment due to the quantities in which they are introduced or seriously reduce amenities may be placed only when the quantities to be introduced at a single time and place are controlled to prevent long-term damage to the environment or amenities. The proposed dredged material would not result in long-term damage to amenities or the environment due to the quantities in which it would be placed. The material would be placed at the HARS for the purpose of remediation and would benefit the area by covering contaminated sediments there. The SJS was given final designation by EPA in 1988 following preparation of an SEIS and determination that it met the environmentally based site selection criteria of 40 CFR Part 228, including those related to amenities (see §§228.6(a)(2), (3), (8), and (11)). The proposed dredged material has been tested and found to meet the requirements of 40 CFR 227.6 and 227.27, as described in a separate memorandum for the record. The proposed material would be in the amount of approximately 735,000 cubic yards. It is concluded that the proposed placement would not cause long-term damage to amenities or the environment due to the quantities proposed for placement.

Section 227.10 Hazards to Fishing, Navigation, Shorelines, or Beaches

Section 227.10 provides that with regard to the placement of material, the site and conditions must be such that there is no unacceptable interference with fishing or navigation and no unacceptable danger to shorelines or beaches resulting from placement operations. The project material proposed for placement at the SJS would not interfere with fishing, navigation, or pose unacceptable danger to shorelines or beaches. The EIS for the SJS designation (EPA, 1982) and information previously outlined in this memo fully support compliance of the project material with this section.

SUBPART C:

40 CFR Section 227, Subpart C, requires an evaluation of the need to place the material in the ocean. Alternatives to SJS placement for San Juan Harbor Federal Navigation Project dredged

materials were evaluated by the project proponent. Upland disposal and disposal of project material within San Juan Bay (i.e., construction of islands and mudflats) were determined to be environmentally unacceptable, not available or prohibitively expensive. No alternatives to use of the SJS for disposal of project dredged material were identified in responses to the public notice soliciting review of the Site Monitoring and Management Plan prepared for the SJS.

SUBPART D:

40 CFR Section 227 Subpart D sets forth the factors to be considered when evaluating the impact of proposed ocean placement on aesthetic, recreational, and economic values, including the potential for affecting recreational and commercial uses and values of living marine resources.

The factors specifically considered include recreation and commercial uses, water quality, the nature and extent of ocean placement operations, visible characteristics of the material to be disposed, presence of pathogens, toxic chemicals, bioaccumulative chemicals, or any other constituent which can affect living marine resources of recreational or commercial value. These would be used in an overall assessment of the proposed ocean placement on aesthetic, recreational, or economic values, and possible alternative methods of disposal or recycling. See 40 CFR §227.17, §227.18, and §227.19.

Chapter 4 of the EIS for the SJS designation (USEPA, 1982) discusses the potential impacts of ocean placement at the HARS on recreational fisheries, commercial fisheries, shore recreation, and cultural resources. The only items above that need be specifically addressed in this document are the visible characteristics of the material and the presence of pathogens. Section 227.7(c) contains a more detailed discussion of pathogens (see discussion above). The material from this project, as is typical of dredged material, is composed of wet sediments which have accumulated on the bottom of water bodies and when placed in the ocean, quickly sink to the bottom, leaving no visible plume a short time after ocean placement. There are no known sources of potential pathogens that could have specifically impacted the project sediments. On the basis of the discussion in the SEIS and the findings of this memorandum and the "Review of Compliance with the Testing Requirements of 40 C.F.R. 227.6 and 227.27 for the San Juan Harbor Federal Navigation Project" (EPA, 2008), it is not expected that adverse impacts to the above amenities would occur.

With respect to Section 227.17(b)(2), if the ocean placement were not authorized there would be an adverse economic impact on the local community and the Commonwealth of Puerto Rico as the majority of goods landed on the island are brought in via water. Failure to dredge this project would not adversely impact recreational boating or aesthetic values.

SUBPART E:

40 CFR Section 227, Subpart E sets forth the factors to be considered in evaluating the impacts of the proposed ocean placement on other uses of the ocean, including long range impacts on

other uses of the ocean. Specifically, the uses considered include, but are not limited to, commercial and recreational fishing in open ocean areas, coastal areas, and estuarine areas; recreation and commercial navigation; actual or anticipated exploitation of living and non-living marine resources; and scientific research and study.

Chapter 4 of the EIS addresses the effects of disposal on public health and safety (including navigational hazards) and the effects on the ecosystem (biota and water column). It also addresses the environmental effects and mitigative measures that are short-term, long-term, or involve the irreversible or irretrievable commitment of resources. Based upon the discussion in the SEIS, the findings in this memorandum, and the "Review of Compliance with the Testing Requirements of 40 C.F.R. 227.6 and 227.27 for San Juan Harbor Federal Navigation Project" (USEPA, 2008) it is concluded that there would be no adverse impact on the uses to be considered under 40 CFR Part 227 Subpart E, incorporating considerations of long-term impacts (§227.20(a)) and an evaluation on an individual basis for effects on uses of the ocean for purposes other than ocean placement (§227.20(b)).

REFERENCES:

Atwell, R.W. and R.R. Colwell. 1981. "Actinomycetes in New York Harbor Sediments and Dredging Spoil". Marine Pollution Bulletin, Vol. 12, No. 9, p. 351-353.

Battelle Ocean Sciences (Prepared for U.S.E.P.A.). 1994. Plume Tracking of Dredged Material Containing Dioxin (Draft Final Report).

USEPA. 1982. Environmental Impact Statement (EIS) for the San Juan Harbor, Puerto Rico Dredged Material Disposal Site Designation (Final) U.S. Environmental Protection, Region 2, New York, December 1982.

USEPA. 2008. Review of Compliance with the Testing Requirements of 40 C.F.R 227.6 and 227.27 for San Juan Harbor Federal Navigation Project. San Juan Harbor, Puerto Rico. Dated May 1, 2008

